Journal of Applied Sciences

ISSN 1812-5654

science alert

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OPEN ACCESS Journal of Applied Sciences

ISSN 1812-5654
DOI: 10.3923/jas.2019.513.519

Research Article
Perceived Causes of Household Food Insecurity and Policy Implications for Food Production in Kano State, Nigeria

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Abstract

Background and Objective: Achieving food security is still a major problem for households in most rural areas of Nigeria. Hence, this study was conducted to ascertain the perceived causes of household food insecurity in six rural areas of Kano state where intensive crop farming is practiced by rural farmers. **Materials and Method:** Multistage sampling technique was used in selecting 120 respondents for the study. Descriptive statistics such as frequency, percentage and mean scores were used to analyze the data. **Results:** A greater percent of the households were engaged in food, cash crop production and animal rearing. Also, the major crops produced were cereals such as maize, sorghum and millet, among others. Though the majority of the respondents ate three times daily, but they consumed mostly carbohydrate containing foods such as rice, *Tuwo shinkafa*, cornflour, *gero* and yam, among others. The respondents indicated that their food security situation was worse off than the previous years. The respondents also indicated that perceived causes of their food insecurity were mainly, poor extension services, large family size and poverty. **Conclusion:** In spite of the agricultural production activities of the farmers, the study found out that farmers were increasingly food insecure. There is urgent need for policy makers in Kano state to implement pro-poor agricultural policies that would reduce farmers' vulnerability to food insecurity. This has the potential to raise efficiency in food crop production and enhance farmers' food security status.

Key words: Agriculture, farmers, food production, food security, sustainability

Received: December 28, 2018 Accepted: February 08, 2019 Published: May 15, 2019

Citation: Ifeoma Quinette Anugwa and Agwu Ekwe Agwu, 2019. Perceived causes of household food insecurity and policy implications for food production in Kano state, Nigeria. J. Applied Sci., 19: 513-519.

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Food security is a broad concept that encompasses food production, accessibility and utilization. In fact, the food and agriculture organization describes it as a "condition which exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" and when it is not at undue risk of losing such access[1]. Food security can exist at global, regional, national and household levels. Household food security is the application of this concept to individuals within households[2,3].

On the other hand, food insecurity is generally associated with fluctuations in a household's own food production[4]. Food insecurity is consistently linked not only with food productions but also general economic and social development variables. Recent surge in world food prices, trade restrictions imposed by major food importers, increased food commodity speculation, changing climatic pattern resulting in global warming, growing demand for arable land for cultivation of biofuel as well as poor national and local governance to cope with such shocks has worsen the food security situation in most parts of the world especially Nigeria[5,6]. In Nigeria, Matemilola and Elegbede[7] reported an alarmingly high prevalence of food insecurity especially among rural households.

According to Adegboye[8], public policy on food and agriculture is itself at the root of Nigerian food security problems. Olayemi in Adepoju *et al.*[9] further noted that food policy in Nigeria has been characterized by inappropriate role of the government in food and agriculture which manifest in badly formulated and poorly executed food policies and the perennial emergence of the unintended consequences of heavy reliance on imported food.

Furthermore, the socio-economic characteristics and resources of individual households have been identified as basic factors, among other factors, influencing the food security status of rural households[10]. Rural households continue to face poor economic conditions which impact negatively on their living standards and food security situation. They are more vulnerable to malnutrition, low quality foods and sometimes complete lack of food[7], in spite of the fact that they produce the bulk of food. This situation requires that particular factors which affect rural farming households differently must be examined and understood.

Although Kano state has been traditionally considered the bread basket of Nigeria, but Dirorimwe in Irohibe and Agwu[11] noted that poor rural farming households have been facing significant food deficits and limited livelihood options thereby; worsening their food insecurity. Furthermore, Adegboye[8] attributed the deteriorating food security situation to poor agricultural policies affecting adequate food production in Nigeria which could be the case in Kano state. Although, Ngema *et al.*[12], Haile *et al.*[13] and Saidu[14] have critically examined the causes of household food security, however, the policy implications for achieving sustainable food production among rural farming households have not been properly elaborated. Hence, this study was conducted to critically examine the causes of household food security with a view to discussing policy implications for food production and sustainability.

MATERIALS AND METHODS

The study was conducted in Kano state between April and December, 2010. Kano state is one of the 36 states in Nigeria, located at the northwestern part of the country. It lies between latitudes 9°30' and 10°33' North of the equator and longitudes 7°34' and 9°25' East of the Greenwich Meridian. It borders Katsina state to the northwest, Jigawa state to the northeast and Bauchi and Kaduna states to the south. The state has an altitude[15] of 500-750 m a.s.l.

A tropical wet and dry climate prevails over the state and it has two distinct seasons, the wet and dry seasons. The wet season lasts between May and early October while the dry season lasts between November and April. The southern part of the state lies in the northern Guinea savannah agro-ecological zone while the northern part covers the Sudan savannah. Annual rainfall varies from 600-1200 mm in the Guinea savannah to 300-600 mm in the Sudan savannah. The mean annual temperature is about 26°C in the coolest months (December/January) and 31°C in the hottest months (April/May). The humidity is relatively low[16].

According to the 2006 census, Kano state is the most populous state in the country with a population of 9,383,683 people, 75% of who are involved in agriculture, which is the mainstay of the state[17]. The total land area is 20,760 km^2. Kano state has more than 18,684 km^2 of cultivable land and is the most irrigated in the country[15].

Kano state has 44 local government areas. The local government areas are classified as Kano urban and rural areas. Kano urban area comprises six LGAs which includes Kano municipal, Fagge, Dala, Gwale, Tarauni and Nassarawa. The rural areas comprises 38 LGA-Ajingi, Albasu, Bagwai, Bebeji, Bichi, Bunkure, Dala, Dambatta, Dawakin Tofa, Doguwa, Gabasawa, Garko, Garum-Mallam, Gaya, Gezawa, Gwarzo, Kabo, Karaye, Kibiya, Kiru, Kumbotso, Kunchi, Kura, Madobi, Makoda, Minjibir, Rano, RiminGado, Rogo, Shanono, Sumaila, Takaila, Tofa, Tsanyawa, Tundu Wada, Ungogo, Warawa and Wudil[15].

Study design: A multi-stage random sampling technique was employed in selecting respondents for the study. In the first stage, 6 rural local government areas were purposively selected from the 38 rural local government areas in the state on the basis of their intensity in crop production. The local government areas selected include Kura, Bunkure, Garunmalam, Ungogo, Makoola and Gezawa. In the second stage, 4 town communities were selected through simple random sampling technique from each of the local government areas giving a total of 24 communities.

The town communities selected were:

- Kura-Kosawa, Dan–Hasan, Kura town and Karfi
- Bunkure-Kokotawa, Bunkure town, Kulluwa and Shimar
- Ungogo-Rimingata, Ungogo town, Bachirawa and Bagadawa
- Makoola-Danmarke, Mai Tsidau, Wailare and Tukui
- Garunmalam-Garum–Baba, Chiromawa, Kadawa and Gafan
- Gezawa-Gezawa town, Jogana, Tokarawa and Babawa

In the third stage, the community leaders were asked to make a list of 10 rural farmers in their communities and from the list, 5 farmers were selected through simple random sampling technique from each of the communities, giving a total of 20 farmers per local government area. Thus, the total sample size for the study was 120 respondents.

The respondents were asked to indicate the types of food produced and consumed by them in the last one year. To ascertain the respondents' perception of their household food security situation, they were asked to indicate how many times they fed in a day, they classes of food consumed as well as their food security situation. To ascertain perceived causes of household food insecurity, a five point Likert-type scale was used. Respondents were required to indicate their opinions by checking any of the five options namely, 'strongly agree, agree, undecided, disagree and strongly disagree. Values assigned to these options were 4, 3, 2, 1 and 0, respectively. These figures were added and further divided by 5 to get mean score of 2. To get the mean values used for the decision rule, 0.05 was added to 2 and also subtracted by 2 to give 1.95. Thus, variables with mean scores responses greater than or equal to 2.05 were regarded as perceived causes, while responses with mean values equal to or less than 1.95 were not regarded as perceived causes of household food insecurity.

Data collection and analysis: Primary data for this study were collected from crop farming households through the use of structured interview schedule, comprising closed and open-ended questions. Information were collected on age, occupation and sex of household head including other household characteristics such as monthly income, crops produced and consumed and perceived causes of household food insecurity. Descriptive statistics such as frequency, percentages and mean scores were employed in analyzing the data.

RESULTS

Crops produced and consumed: Entries in Table 1 shows the major crops produced and consumed in the study area. The major crops produced include: Maize (85.0%), sorghum (49.2%), millet (45.8%) and groundnut (40.8%). Others include rice (36.7%), cowpea (35.8%) and tomatoes (35.8%). Also, data in Table 1 further showed that maize (79.2%), sorghum (40.8%), millet (34.2%) and rice (32.5%) are the main crops commonly consumed in the study area. This could be the reason why they are commonly grown.

Perceived household food security situation of rural farming households

Perception of the number of times household feed daily: Figure 1 shows that the majority (86.7%) of the households ate three times daily, while 10.8% of them ate twice daily. The remaining 2.5% of them ate more than three times daily.

Table 1: Distribution of respondents according to types of crop produced and consumed

	Produced		Consumed	
Crops	Frequency	Percentage	Frequency	Percentage
Maize	102	85.0	95	79.2
Millet	55	45.8	41	34.2
Sorghum	59	49.2	49	40.8
Rice	44	36.7	39	32.5
Cowpea	43	35.8	24	20.0
Groundnut	49	40.8	11	9.2
Tomatoes	43	35.8	24	20.0
Onions	26	21.7	3	2.5
Potatoes	5	4.2	-	-
Spinach	14	11.7	1	0.8
Cabbage	14	11.7	2	1.7
Lettuce	7	5.0	-	-
Sugarcane	3	2.5	-	-
Pepper	3	2.5	-	-
Okra	2	1.7	1	0.8
Carrot	2	1.7	1	0.8

*Multiple response

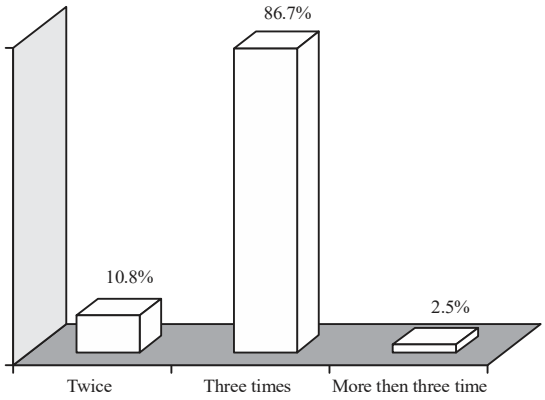

Fig. 1: Number of times households feed daily

Table 2: Distribution of respondents according to classes of food consumed weekly

Variables	Frequency	Percentage
Classes of food consumed weekly		
Carbohydrate	104	86.7
Protein	89	74.0
Fats and oil	58	48.3
Minerals	14	11.7
Vitamins	83	69.2

Table 3: Distribution of respondents by the perception of their household food security situation

Variables	Frequency	Percentage
Perception of household food security situation		
Worst	51	42.5
A little worst	45	37.5
A little better	24	20.0

Classes of food consumed: Entries in Table 2 indicated the type of food consumed in the study area. The majority (86.7%) of the respondents consumed carbohydrate foods, which includes rice, *Tuwo shinkafa*, cornflour, *gero* and yam among others while 74.0% consumed protein foods, which includes bean cake (*moi moi*), meat, fish and sour milk (*fura da nono*), among others. Also, about 69.2% of the respondents consumed vitamins, which includes fruits, green leafy vegetable, carrots and salad among others, while 48.3% consumed fats and oil, which includes butter, palm oil and groundnut oil among others. The remaining 11.7% consumed minerals weekly.

Respondents' perception of their household food security situation: Entries in Table 3 shows that 42.5% of the respondents believed that their food security situation was worst during the past one year, while 37.5% believed it had been a little worst. The remaining 20.0% believed it had been a little better.

Perceived causes of household food insecurity: Entries in Table 4 indicates the perceived causes of household food insecurity. The major causes of household food insecurity include: Poor extension services (M = 2.46), large family size (M = 2.34) and poverty (M = 2.28).

Other perceived causes of household food insecurity include: Seasonal fluctuation in food availability due to climatic change (M = 2.27), instability in government

Table 4: Mean score of perceived causes of household food insecurity

Causes of household food insecurity	Mean	Std. deviation
Low income to purchase food items	2.11*	0.72
Scarcity of farmland for crop production	2.04*	0.71
Unemployment	1.66	0.85
Large family size	2.34*	0.97
High food price	2.23*	0.62
Poverty	2.28*	0.91
Poor agricultural productivity due to infertile land	2.01*	0.75
Poor access to credit facilities	2.26*	0.80
High cost of transporting food items to the market for sale	1.98	0.84
Seasonal fluctuations in food availability due to climatic change	2.27*	0.73
Poor market distribution channels	1.65	0.72
Fragmentation of land resulting from population growth	1.94	0.81
Limited access to labour saving farm and food processing implement	1.61	0.68
Labour constraints during farming	1.95	0.82
Poor storage facilities	2.21*	0.78
Poor extension services	2.46*	0.83
Mismanagement of resources	2.08*	0.78
Low rate of technology adoption	1.77	0.83
Diseases and pests infestation on crops and animals	2.07*	0.79
Cultural practices that prevents family members from eating certain foods	1.38	0.76
Low level of education	2.07*	0.75
Gender inequality in land tenure which denies women access to land	1.33	0.95
Lack of appropriate nutrition knowledge on food preparation	1.77	0.75
Poor post-harvest, processing and storage technology	1.58	0.91
Instability in government policies	2.27*	0.65

*Perceived causes

policies (M = 2.27), poor access to credit facilities (M = 2.26), poor storage facilities (M = 2.21), high food price (M = 2.23), low income to purchase food items (M = 2.11), mismanagement of resources (M = 2.08), low level of education (M = 2.07), diseases and pests infestation on crops and animals (M = 2.07); scarcity of farmland for crop production (M = 2.04) and poor agricultural productivity due to infertility (M = 2.01).

DISCUSSION

Cereals were the major crops grown in the area and this finding is in agreement with Dirorimwe[18], who noted that Kano state is famous for its grain production in the country. Though most of the households ate three meals daily, the quality and quantity of the food consumed determines their food security status. According to Ziervogel *et al.*[19], adequate food utility includes how often meals are eaten and of what they consist. Idachaba[20] also reported that many households and individuals in Nigeria merely eat for survival. Hence, the number of meals consumed by the households does not necessarily indicate adequate food utility. Since the households produce more of carbohydrate containing crops like grains or cereals, they consumed more of carbohydrate containing food. Carbohydrate containing food is a staple energy–giving food in Nigeria and households in the area probably consume more often so as to be energetic to carry out farming activities. However, it should be noted that consuming mostly carbohydrate containing food could result to malnutrition. Furthermore, it was observed that a greater proportion of the respondents may not have the ability to meet their dietary requirement possibly because of their low nutrition knowledge and other factors. This further lends credence to the worsening food security situation in the area as noted by Dirorimwe[18] in Irohibe and Agwu[11]. Since the households in the study area have low extension contact in a year, they may have limited knowledge in agricultural technology techniques needed to boost food production. Also, access to various inputs needed for agricultural production is limited. This results in households having food security problems. Haile *et al.*[13] reported that large family size causes food insecurity since food requirements increase in relation to the number of persons in a household. The majority of farm households in the study area are small-scaled subsistence producers with limited land and finance to purchase agricultural inputs for adequate food production. Thus, increasing family size exerts more pressure on consumption than the labour it contributes to production with the result that food insecurity sets in.

According to Ibrahim *et al.*[21], due to the increasing prices of food in Nigeria, the quality and quantity of food intake among households has continued to decrease and a large proportion of households earning is being spent on food. When the cost of food is high, households especially those with low income, do not afford good quality food. Poverty reduces productivity and as such prevents people from producing or acquiring the food they need. Thus, adequate food availability, accessibility and utilization-elements of food security-become threatened, with the result that such households become food insecure. Dirorimwe[18] also observed that fragmentation of agricultural land resulting from population growth as well as limited access to labour-saving farm and food processing implements are some of the underlying causes of food insecurity in Kano state. The fragmentation of agricultural land, the results of increases in population and land acquisition through inheritance causes inadequate food production. The size of land that a household cultivate directly affects their production and hence food security. Food production, in fragmented portions of land, results in inadequate food availability to meet the demands of the increasing population in the area. Also, the acquisition of fragmented land, mainly through inheritance affects agricultural production and poses a constraint to sustainable food security.

The slow progress in reducing hunger and malnutrition in Nigeria, may be as a result of the limited success of the conventional approaches employed by both national governments and the international communities which is mostly agriculture-based with households as the sole unit of focus[6]. Improving food production and sustainability in Kano state typically requires the recognition that food insecurity is a cross-sector challenge at multiple levels and as such is central to overall development. Pieters *et al.*[22] and Ecker and Breisinger[6] opined that both macro and micro-level short-run and long-run measures that incorporates the macro-economic dimension which specifies key economic sectors of food security, considers external shocks and stresses to food insecurity as well as preventive intervention efforts and emphasizes the fact that nutrition outcomes are both the consequence and cause of underdevelopment should be implemented in order to ensure sustainable production and access to food by the poor.

According to Ecker and Breisinger[6], such short-run measures involve interventions to assure that the poor have access to food through various forms of real-income transfers, such as rations, food aids and subsidised distribution of food. On the other hand, long-run solutions involve creating food production and distribution systems that assure adequate access of the poor to food through income generation, nutrition and health education and an efficient supply system for food, either domestically produced or imported.

Based on the foregoing, there is urgent need for policy makers in Kano state to implement pro-poor policies that would reduce the vulnerability of farmers to food insecurity. Such policies include the creation and expansion of state social safety mechanisms, incorporation of gender-sensitive issues in agricultural development, revival and adequate funding of extension services, in addition to a boost in investments to raise agricultural productivity and adapt to climate change sustainably. Finally, policies should be aimed at ensuring that institutional credit sources reduce the current high interest rates of 23% on loans and the procedural difficulties in securing institutional facilities, so as to encourage farmers access to such credit facilities for increased agricultural production and hence, food security.

CONCLUSION

Although the respondents produced the food they mainly consumed, but their food security situation deteriorated. The causes of their food insecurity were mainly due to socio-economic and institutional barriers such as poor extension services, among others as well as policy related issues. Hence, incentives should be provided to extension agents in form of improved remuneration so as to encourage them to disseminate improved agricultural technologies to farmers. This has the potential to raise efficiency in food crop production and increase farmers' sustainability of food.

SIGNIFICANCE STATEMENT

This study discovered that poor extension services, large household size and unstable government policies were major causes of the rural farming households' food insecurity situation. This finding can be beneficial to policymakers as it would enable them to understand the underlying causes of food insecurity so as to formulate effective polices for ensuring adequate food security. The study will also help to identify the food insecure as target groups and would give a better understanding of the causes of food insecurity as policy instruments for development planners so as to design effective food security programmes. It would further encourage trained extension personnel to disseminate relevant information to farmers regarding improving their farming methods and techniques by introducing new varieties of crops and improved breeds of animals which will improve their income and thus reduce the level of their food insecurity.

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